

**Before the
FEDERAL COMMUNICATIONS COMMISSION
445 12th Street, S.W., Washington, D.C. 20554**

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In the Matter of)	
)	WT Docket No. 18-203
The State of Mobile Wireless Competition)	
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COMMENTS OF AT&T SERVICES INC.

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July 26, 2018

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Pursuant to the Public Notice released by the Wireless Telecommunications Bureau on June 26, 2018,¹ AT&T Inc. (“AT&T”) submits the following comments on the state of mobile wireless competition.

INTRODUCTION AND SUMMARY

In last year’s report, the Commission correctly found that the wireless marketplace is “effectively competitive” within the meaning of Section 332(c)(1)(C).² Since the last report, the wireless marketplace has become even more competitive by virtually every measure, although two factors stand out. First, carriers continue to compete fiercely on unlimited pricing plans and features, which is delivering unprecedented value for consumers at the lowest-ever prices. Second, each of the four national carriers continues to invest billions of dollars to upgrade their networks

¹ Public Notice, *Wireless Telecommunications Bureau Seeks Comment on the State of Mobile Wireless Competition*, WT Docket No. 18-203, DA 18-663 (WTB rel. June 26, 2018) (“Notice”).

² See Twentieth Report, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Wireless Services*, WT Docket No. 17-69 (Sept. 27, 2017) (“Twentieth Report”); 47 U.S.C. § 332(c)(1)(C) (requiring the Commission to issue a report each year analyzing “whether or not there is effective competition” in the wireless marketplace).

and compete on network quality, and each is enhancing their 4G LTE networks and poised to roll out 5G services in the next few months.

Competition over unlimited plans and associated features resulted in a “price war” that “underscor[es] the cutthroat nature” of competition among the leading wireless carriers.³ AT&T began the industry’s shift back to unlimited plans in early 2016, when it introduced a \$100-per-month unlimited wireless plan for customers who also subscribed to AT&T’s DIRECTV service. T-Mobile and Sprint responded quickly with their own, lower-priced unlimited plans, with T-Mobile offering unlimited data for \$70 per month for the first line and Sprint offering \$60 per month for the first line. AT&T fought back with two new unlimited plans priced at \$60 and \$90 (depending on the value-added features included), and made those plans available to all customers (not just DIRECTV customers). After losing a substantial number of customers to the unlimited plans offered by its rivals, Verizon buckled and introduced a new unlimited plan for \$80 per month for the first line, which it later reduced to \$75. Sprint responded by offering a \$50-per-month unlimited plan for any customer switching from T-Mobile, AT&T or Verizon. And this competitive tit-for-tat has continued into 2018, most recently with Sprint introducing a *\$15 per month* unlimited plan for anyone who switches to Sprint from any of its national rivals.

Carriers have also continued to innovate to offer greater value at those lower prices. For example, AT&T added HBO to its \$90 offering, and now also includes a live television service called WatchTV. T-Mobile responded by adding Netflix and MLB.tv to its unlimited offerings, and Sprint added Hulu and TIDAL. And Verizon now offers 500 GB of data storage in the cloud and five days of use overseas each month with its unlimited plans, and most recently began

³ Martha DeGrasse, *Sprint Slashes Data Prices With \$15 Unlimited Plan For Those Willing To Switch*, FierceWireless (June 8, 2018), <https://www.fiercewireless.com/wireless/sprint-slashes-data-prices>.

allowing families to mix-and-match Verizon’s various unlimited plans.

The intensity of this back-and-forth competition has produced aggregate pricing data that are astonishing. The Bureau of Labor Statistics’ Wireless Price index fell by *11 percent* in 2017, which was “the largest decline in 16 years,”⁴ and those declines have continued into 2018. Similarly, CTIA estimates that the average monthly revenue per unit for wireless services dropped to \$38.66 for 2017, which is a 20 percent decline from 2013, and is the lowest since CTIA has been tracking that figure. As prices have plummeted, output continues to soar with subscribership, connections, and data usage at all-time highs and experiencing double-digit percentage growth.

Wireless providers also continue to spend billions of dollars on network upgrades, as they compete to provide the fastest and most reliable networks with nationwide coverage. Carriers collectively invested \$25.6 billion in capital improvements in 2017, bringing the total since 2010 to \$226 billion. As a result of these investments, 99.7 percent of Americans now have access to at least one 4G LTE provider, with 98 percent of Americans having the choice of at least three providers of 3G or 4G mobile service as of January 2017.⁵

As explained below, providers also are investing heavily to upgrade their LTE networks to enhance coverage, speed, and reliability. But the big story this year is 5G, which is now imminent. Each of the national carriers has assembled the spectrum, conducted the trials, and begun to deploy the infrastructure for their 5G services. And all of the national carriers will begin offering 5G services in numerous cities by early 2019, with each relying on different combinations of advantages and strategies.

⁴ Dr. Robert F. Roche and Shae Gardner, *CTIA’s Wireless Industry Indices Report, A Comprehensive Report from CTIA based on CTIA’s Wireless Industry Survey Results, Year-End 2017 Results*, at 59 (July 2018) (“CTIA Wireless Competition Report”).

⁵ See Twentieth Report, Appendix III: Table III.D.i; Appendix III: Table III.D.v.

AT&T will introduce mobile 5G service in 12 markets by the end of 2018, using 39 GHz millimeter wave spectrum, and thus will likely be the first U.S. carrier to offer mobile 5G services in the United States. AT&T will be deploying 5G both in large and small cities.

Sprint will offer mobile 5G service in the first half of 2019, using its deep holdings of 2.5 GHz spectrum. Sprint's 2.5 GHz spectrum holdings include bandwidth comparable to other carriers' mmWave spectrum holdings, yet with the better propagation characteristics of mid-band spectrum. Sprint has made clear that it sees its spectrum position as an advantage in 5G that gives it the opportunity to leap-frog other carriers: "we see 5G as a very important milestone in the history of Sprint because we have the spectrum to basically lead on 5G and lead in a different way."⁶

T-Mobile, meanwhile, has assembled a portfolio of low-, mid-, and high-band spectrum for its 5G network. T-Mobile has repeatedly touted the advantages of this "multi-spectrum" strategy, which includes significant "unpopulated" spectrum that does not need to be cleared of older-generation services.⁷ T-Mobile is currently building a 5G network that will reach 30 cities by the end of 2018 (using high-band spectrum) and nationwide by 2020 (using low-band 600 MHz spectrum). T-Mobile will eventually use its mid-band spectrum holdings for 5G as well, arguing that it already has "an impressive volume of mid-band spectrum to deploy 5G."⁸

Verizon has also announced the launch of a residential 5G broadband service in the second

⁶ Sprint Corp., Q3 2017 Earnings Call, at 16 (Feb. 2, 2018), http://s21.q4cdn.com/487940486/files/doc_financials/transcripts/S-US-20180202-2039822-C.pdf.

⁷ See, e.g., T-Mobile Newsroom, *T-Mobile Building Out 5G In 30 Cities This Year ... And That's Just The Start* (Feb. 26, 2018), <https://www.t-mobile.com/news/mwc-2018-5g>.

⁸ T-Mobile Newsroom, *Setting the 5G Record Straight: Announcing Plans for Nationwide 5G from T-Mobile* (May 1, 2017), <https://www.t-mobile.com/news/nationwide-5g-blog>.

half of 2018, beginning with three to five cities, but more broadly it has said that it “now has all of the pieces in place to quickly accelerate the deployment of 5G.”⁹

In short, wireless competition is giving consumers more value at lower prices than ever before. Competition has never been greater than it has been over the past two years, and as a result prices are at all-time lows, output is at all-time highs, and innovation, network quality, and consumer satisfaction are at unprecedented levels. The Commission thus has the easiest call it has ever had to make under Section 332(c)(1)(C): the wireless marketplace is, quite obviously, “effectively competitive.”

I. MARKETPLACE PERFORMANCE: PRICE WARS, FEATURE WARS, AND SKYROCKETING OUTPUT CONFIRMS THAT THE WIRELESS MARKETPLACE REMAINS ROBUSTLY COMPETITIVE.

As AT&T has previously explained, wireless carriers have invested tens of billions of dollars to acquire the spectrum and deploy the infrastructure necessary to provide the most technologically advanced wireless services available today. Each provider thus has powerful incentives to compete as aggressively as possible to fill those networks with traffic. The result is a marketplace that has for years exhibited all of the hallmarks of intense competition: decreasing prices, increasing output, increasing quality, and more choice. These trends have continued since the Commission’s last report.

The most obvious manifestation of this competition is the industry’s rapidly decreasing prices and the ongoing introduction of service plans that offer more for less. Over the past two and a half years, providers have shifted mainly to plans that offer “unlimited” data, voice, and text messaging. This shift has ignited what Bloomberg, the Wall Street Journal, FierceWireless, and

⁹ See PR Newswire, Verizon to acquire Straight Path spectrum to accelerate 5G deployment (May 11, 2017), <https://www.prnewswire.com/news-releases/verizon-to-acquire-straight-path-spectrum-to-accelerate-5g-deployment-300456169.html>.

others have called a “price war”¹⁰ that “underscor[es] the cutthroat nature” of competition in the wireless marketplace.¹¹

Although providers have been offering unlimited plans for many years, the current, accelerated competition over price and features arguably began in January 2016, when AT&T “re-introduced” an unlimited plan, available to customers who also subscribed to AT&T’s DIRECTV service, priced at only \$100 per month for the first line (the second and third lines were \$40 per month, and the fourth line was free).¹² Both T-Mobile and Sprint responded by dramatically re-inventing their own unlimited plans.¹³ T-Mobile introduced a new unlimited plan priced at only

¹⁰ See Ryan Knutson and Joshua Jamerson, *Verizon Customers Defect as Competition Ramps Up*, Wall Street Journal (Apr. 20, 2017), <https://www.wsj.com/articles/verizon-for-first-time-loses-core-wireless-customers-1492691308> (“The industry’s bruising price war has been a boon to consumers.”); Donna Fuscaldo, *Unlimited Data Offers Mean New Carrier Price War*, Investopedia (Feb. 17, 2017), <http://www.investopedia.com/articles/investing/021717/unlimited-data-offers-mean-new-carrier-price-war.asp>; Tomi Kilgore, *Wireless carrier stocks fall amid budding price war in unlimited data*, MarketWatch (Feb. 27, 2017), <http://www.marketwatch.com/story/wireless-carrier-stocks-fall-amid-budding-price-war-in-unlimited-data-2017-02-27>; Scott Moritz, *T-Mobile, Sprint Escalate Price War With New Unlimited Plans*, Bloomberg Technology (Aug. 18, 2016), <https://www.bloomberg.com/news/articles/2016-08-18/t-mobile-unveils-unlimited-wireless-plan-escalating-price-war>.

¹¹ Martha DeGrasse, *Sprint Slashes Data Prices With \$15 Unlimited Plan For Those Willing To Switch*, FierceWireless (June 8, 2018), <https://www.fiercewireless.com/wireless/sprint-slashes-data-prices>.

¹² AT&T Newsroom, *AT&T Introduces New Unlimited Plan For AT&T Wireless and DIRECTV Subscribers* (Jan. 11, 2016), http://about.att.com/story/unlimited_plan_for_wireless_and_directv_subscribers.html (“The new AT&T Unlimited Plan includes unlimited data and unlimited talk and text. Customers can get the AT&T Unlimited Plan on a smartphone for \$100 per month. Additional smartphones are \$40 per month each, and a fourth smartphone can be added at no additional cost. The new AT&T Unlimited Plan is the first of many integrated video and mobility offers the company plans to announce in 2016. Also, AT&T plans to launch a wide-range of new video entertainment options later this year.”).

¹³ See Colin Gibbs, *T-Mobile, Sprint pit new unlimited data plans against one another*, FierceWireless (Aug. 18, 2016), <http://www.fiercewireless.com/wireless/t-mobile-and-sprint-lure-users-new-unlimited-data-plans>; Sprint Newsroom, *Sprint Launches Best Unlimited HD Plan*

\$70 per month for the first line, undercutting AT&T's price.¹⁴ Sprint also introduced a new unlimited plan with a price of only \$60 per month for the first line, thus undercutting both AT&T and T-Mobile.¹⁵

In early 2017, AT&T responded by replacing its original \$100 unlimited plan with two new unlimited plans priced at \$60 and \$90 (depending on the value-added features included), and made those plans available to all customers (as opposed to only DIRECTV customers).¹⁶ Verizon then entered the fray in early 2017 by introducing an unlimited plan for \$80 per month for the first line.¹⁷ Sprint responded by lowering its unlimited plan pricing to just \$50 per month for any customer that switches from T-Mobile, AT&T or Verizon.¹⁸ Verizon responded again with

Ever (Feb. 16, 2017), <http://newsroom.sprint.com/sprint-launches-best-unlimited-hd-plan-ever.htm>.

¹⁴See T-Mobile Newsroom, *Hello Un-carrier 12...R.I.P. Data Plans T-Mobile Goes All In on Unlimited* (Aug. 18, 2016), <https://www.t-mobile.com/news/rip-data-plans>.

¹⁵See Sprint Newsroom, *Sprint Launches Unlimited Freedom: Two Lines of Unlimited Talk, Text and Data for Just \$100—all on a Great Network—and the Best Price Among All National Carriers* (Aug. 18, 2016), <http://newsroom.sprint.com/sprint-launches-unlimited-freedom-two-lines-of-unlimited-talk-text-and-data-for-just-100-all-on-a-great-network-and-the-best-price-among-all-national-carriers.htm>. Sprint has subsequently offered a \$50 unlimited product. See Sprint Newsroom, *Sprint Simplifies Choice for Customers and Doubles Down on Unlimited* (April 6, 2017), <http://newsroom.sprint.com/sprint-simplifies-choice-for-customers-and-doubles-down-on-unlimited.htm>.

¹⁶ See AT&T Newsroom, *AT&T Brings Unlimited Wireless and Entertainment Deals to Market* (Feb. 27, 2017), http://about.att.com/story/att_brings_new_unlimited_wireless_and_entertainment_deals_to_market.html.

¹⁷ See Mike Snider and Eli Blumenthal, *Verizon joins the unlimited party with \$80 plan*, USA Today (Feb. 12, 2017), <https://www.usatoday.com/story/tech/news/2017/02/12/verizon-joins-unlimited-wireless-data-party/97827926>.

¹⁸ Sprint Newsroom, *Sprint Launches Best Unlimited HD Plan Ever* (Feb. 16, 2017), <http://newsroom.sprint.com/sprint-launches-best-unlimited-hd-plan-ever.htm>.

multiple unlimited plans starting at \$75 per month.¹⁹ T-Mobile subsequently introduced a \$50 per month unlimited plans for two lines for people aged 55 and up.²⁰ Most recently, for a limited period in June 2018, Sprint offered a jaw-dropping *\$15 per month* unlimited plan for anyone who switched from the other national carriers to Sprint.²¹

This competitive conduct has not been limited to price. Providers also are competing to offer the best combination of features with their unlimited plans. For example, the unlimited plans initially offered by T-Mobile and Sprint included limitations on, among other things, video quality and mobile hotspot usage. However, both carriers greatly relaxed those restrictions in response to the less restrictive plans offered by AT&T and Verizon.²² AT&T further turned up the heat by including HBO with its \$90 offering, as well as 10 GB mobile hotspot usage, high definition video streaming, unlimited international text messaging, roaming in Mexico and Canada, and a \$25 credit towards monthly DIRECTV subscriptions.²³ T-Mobile responded by, among other things, adding Netflix to its unlimited offerings, and later adding MLB.tv.²⁴ Sprint added Hulu and

¹⁹ Robert Pegoraro, *Verizon's cheaper 'unlimited' data plan means serious tradeoffs*, USA Today (Aug. 23, 2017), <https://www.usatoday.com/story/tech/columnist/2017/08/23/verizons-cheaper-unlimited-data-plan-means-serious-tradeoffs/595720001>.

²⁰ Edward C. Baig, *T-Mobile hopes to lure Baby Boomers with \$60 two-line wireless plan*, USA Today (Aug. 7, 2017), <https://www.usatoday.com/story/tech/columnist/baig/2017/08/07/t-mobile-hopes-lure-baby-boomers-60-two-line-wireless-plan/544302001>.

²¹ Sprint Newsroom, *Best. Time. To Switch to Sprint. Ever. Try Sprint's Improved Network – Get Unlimited for \$15 per month, per line* (June 7, 2018), <http://newsroom.sprint.com/best-time-to-switch-to-sprint-ever-try-sprints-great-network-get-unlimited-for-15-per-month-per-line.htm>.

²² See Patrick Holland, *Unlimited data plans: Verizon, T-Mobile, AT&T and Sprint compared*, CNET (Mar. 9, 2017), <https://www.cnet.com/news/how-does-verizon-unlimited-plan-stack-up-against-the-others>.

²³ See AT&T Website, *Unlimited Data Plans*, <https://www.att.com/plans/unlimited-data-plans.html>.

²⁴ T-Mobile Newsroom, *America's Best Unlimited Just Got Even Better – T-Mobile Now Includes Netflix On Us* (Sep. 5, 2017), <https://www.t-mobile.com/news/tmobile-uncarrier-netflix>; T-Mobile

TIDAL to its unlimited offerings.²⁵ And AT&T has again upped the ante by including popular live television programming with its unlimited plans called WatchTV.²⁶ For its part, Verizon added 500 GB of data storage in the cloud and five days of use overseas each month,²⁷ and most recently began allowing families to mix-and-match Verizon's various unlimited plans.²⁸

The result of this intense rivalry is that consumers are getting more service and more features for prices that are, by multiple measures, the lowest ever. "The Bureau of Labor Statistics' Wireless Price index fell by 11 percent [in 2017]," which the "Wall Street Journal [said] . . . was the largest decline in 16 years,"²⁹ and those declines have continued into 2018.³⁰ Moreover, CTIA estimates that the average monthly revenue per unit for wireless services dropped to \$38.66 for 2017, which represents a 20% decline from 2013, and is the lowest since CTIA has been tracking that figure.³¹

Newsroom, *It's a Steal! T-Mobile Customers Score a FREE Year of MLB.TV* (March 19, 2018), <https://www.t-mobile.com/news/mlb-tv-offer>.

²⁵ See also Todd Spangler, *Sprint Will Bundle Hulu VOD Service With Unlimited Plans For No Extra Cost*, Variety (Nov. 15, 2017), <https://variety.com/2017/digital/news/sprint-hulu-vod-unlimited-plan-1202614940/>.

²⁶ See Mike Dano, *AT&T's new unlimited plans still cheaper than Verizon's*, FierceWireless (June 21, 2018), <https://www.fiercewireless.com/wireless/at-t-s-new-unlimited-plans-still-cheaper-than-verizon-s>; see also T-Mobile also made an acquisition in late 2017 with an eye towards creating "some kind of live TV streaming package." See Chris Mills, *Can T-Mobile actually fix cable*, BGR (Dec. 13, 2017), <https://bgr.com/2017/12/13/t-mobile-tv-package-launch-date-vs-directv-now/>.

²⁷ Aaron Pressman, *Verizon Adds a Third Unlimited Plan With Even More High-Speed Data*, Fortune (June 14, 2018), <http://fortune.com/2018/06/14/verizon-third-unlimited-pal/>.

²⁸ Verizon Newsroom, *Mix and Match your unlimited plans* (June 18, 2018), <https://www.verizon.com/about/news/mix-and-match-your-unlimited-plans>.

²⁹ CTIA Wireless Competition Report, at 59.

³⁰ See BLS Data Viewer, <https://beta.bls.gov/dataViewer/view/timeseries/CUUR0000SEED03>.

³¹ CTIA Wireless Competition Report, at 44. See also Cowen Industry Update, *The Wireless Snapshot – 1Q18*, at 30 (June 18, 2018) (showing sustained quarterly reductions in APRU for each of the four national carriers through the first quarter of 2018).

As noted, looking solely at prices would be misleading, however, because consumers are receiving far greater value. First, as explained above, consumers are receiving myriad additional features at those lower prices, including video streaming services (*e.g.*, Netflix and Hulu), live TV streaming service (*e.g.*, WatchTV), music streaming (*e.g.*, TIDAL), cloud storage, and more. Second, even as prices for service plans plummet, consumers are using more data, resulting in dramatic reductions to the per-megabyte costs of data. In 2017, wireless data traffic was up 14.3 percent compared to 2016, and up 40-fold compared to 2010.³² As a result, a recent analysis estimates that the per-megabyte cost of data was about \$1.37 in 2016, but is now less than \$0.005 per megabyte—a reduction of more than 99 percent.³³ Third, consumers are adding more and more devices to their wireless plans including, for example, mobile phones, tablets, smartwatches, laptops and other wireless-enabled devices. As of year-end 2017, there were more than 400 million wireless subscriber connections in the U.S., which implies an average of 1.2 connections for every American and represents an increase of more than 85 million connections (23%) since 2012.³⁴

In short, prices are falling, output is up, and, as explained in the next section, nationwide carriers continue to make massive investments in their networks and innovate. Today's marketplace is thus clearly producing intense competition.

Although in years past, some commenters have argued that the Commission should discount the competitive significance of T-Mobile and Sprint in evaluating wireless competition, such arguments are not credible, especially today. Both of those providers cover more than 95%

³² CTIA Wireless Report, at 12.

³³ *How America's 4G Leadership Propelled The U.S. Economy*, Recon Analytics, at 10 (Apr. 16, 2018), https://api.ctia.org/wp-content/uploads/2018/04/Recon-Analytics_How-Americas-4G-Leadership-Propelled-US-Economy_2018.pdf; *See also* Twentieth Report ¶ 50.

³⁴ CTIA Wireless Report, at 23.

of Americans.³⁵ In terms of spectrum holdings, T-Mobile and Sprint have *more* spectrum than AT&T and Verizon when measured by MHz per connection.³⁶ Moreover, both have argued that their somewhat smaller customer bases—and hence less populated spectrum—actually gives them some significant competitive *advantages* compared to AT&T and Verizon. For example, T-Mobile has explained that it is “in a unique position with 5G, with its unpopulated spectrum holdings and multi-spectrum strategy. While other wireless companies must kick customers off their congested LTE networks to build out 5G, the Un-carrier is building 5G on wide-open airwaves.”³⁷

In all events, real world evidence confirms that T-Mobile and Sprint are each strong competitors that are flourishing and growing rapidly. T-Mobile reported “record results in the first quarter of 2018,” with “industry-leading customer growth, best-ever service revenues, [and] strong profitability.”³⁸ Indeed, T-Mobile has added more than *40 million* customers since 2013—a gain of more than 120 percent (from about 33 million in 2013 to 74 million today).³⁹ T-Mobile has reported that 2017 was its “fourth year in a row . . . deliver[ing] more than five million total net customer additions and the fifth year in a row adding more postpaid phone net additions than the

³⁵ Twentieth Report ¶¶ 74, 77.

³⁶ See Cowen Industry Update, *The Wireless Snapshot – 1Q18*, at 14 (June 18, 2018) (showing Sprint with more than 3.5 MHz per connection; T-Mobile with more than 1.5 MHz/connection; and AT&T and Verizon with less than 1 MHz per connection).

³⁷ T-Mobile, *T-Mobile Building Out 5G in 30 Cities This Year . . . and That’s Just the Start*, T-Mobile News Room (Feb. 26, 2018), <https://www.t-mobile.com/news/mwc-2018-5g>.

³⁸ T-Mobile 1Q2018 Results, <http://investor.t-mobile.com/Cache/1001236268.PDF?O=PDF&T=&Y=&D=&FID=1001236268&iid=4091145>.

³⁹ Statista, *Total number of customers/subscribers of T-Mobile US from 1st quarter 2010 to 1st quarter 2018*, <https://www.statista.com/statistics/219577/total-customers-of-t-mobile-usa-by-quarter>.

rest of the industry combined.”⁴⁰ These financial results and consistent growth in customers refute any notion that T-Mobile is having difficulty competing against AT&T and Verizon due to its somewhat smaller customer base.

Similarly, Sprint’s latest financial results “includ[e] its highest annual retail phone net additions in five years and the best profitability in company history with its highest annual operating income . . . and annual net income . . . in 11 years, even when excluding the one-time favorable impact from tax reform.”⁴¹ As Sprint has explained to the Commission, it “has continued to act as a competitive catalyst in [this marketplace],” and “Sprint [is] working aggressively to provide high quality and attractively priced voice and data services over expanding broadband networks.”⁴²

II. OTHER INDICIA OF PROVIDER & CONSUMER CONDUCT FURTHER CONFIRM THAT THE WIRELESS MARKETPLACE IS EFFECTIVELY COMPETITIVE.

Declining prices, price wars, and an ever-increase array of innovated service plans are not the only evidence that the wireless marketplace is robustly competitive. Wireless providers also compete fiercely on the basis of network quality, with continuous upgrades to new technologies, constant development of innovative offerings to win customers, and by literally paying consumers to switch. Providers also continue to invest heavily in advertising to try and win business away from their rivals, as switching carriers has become easier than ever. And the result of this intense

⁴⁰ T-Mobile 2017 Annual Report at 2, <http://investor.t-mobile.com/Cache/1500109984.PDF?O=PDF&T=&Y=&D=&FID=1500109984&iid=4091145>.

⁴¹ Sprint 1Q2018 Results, http://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2017/q4/Fiscal-4Q17-Earnings-Release-FINAL.pdf.

⁴² Comments of Sprint Corporation, *Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, WC Docket No. 16-137, at 1, 4 (May 31, 2016).

competition is that consumer satisfaction with wireless services continues to grow.

Network Investment. Wireless providers collectively invested \$25.6 billion in capital improvements in 2017, bringing the total since 2010 to \$226 billion.⁴³ This investment has yielded enormous benefits for the country. In just seven years, 4G networks have gone from no coverage to reaching 99.7 percent of Americans.⁴⁴ Competition now extends deep into rural areas, with 98 percent of Americans having the choice of at least three providers of 3G or 4G mobile service as of January 2017.⁴⁵ At the end of 2017, a record 323,448 cell sites were in operation—a 52% increase over the last 10 years.⁴⁶ Small cell deployment in particular increased 550% in a year, from less than 13,000 small cells in 2017 to 86,000 in 2018.⁴⁷

Looking to the future, the four national carriers are poised to continue their race to upgrade their LTE networks to more advanced technologies offering greater speed and reliability. Indeed, each carrier is already far down the road toward deployment of its 5G network. Each carrier has acquired and has cleared (or is clearing) the spectrum that it will use for its near-term 5G deployments, and each has already conducted trials,⁴⁸ announced detailed plans,⁴⁹ and begun deployments in initial cities.⁵⁰ As a result, all four carriers will be “providing 5G services between

⁴³ See Twentieth Report ¶ 68.

⁴⁴ CTIA, The State of Wireless 2018 (June 10, 2018), at 13 (“CTIA, The State of Wireless Competition Report”), <https://www.ctia.org/news/the-state-of-wireless-2018>.

⁴⁵ Twentieth Report, Web Appendix III, Web Table III.D.a, <https://us-fcc.app.box.com/s/uoh8tfrnzwhew88lk5ojd3o7yldchj0>.

⁴⁶ See CTIA, The State of Wireless 2018, at 20.

⁴⁷ See *id.*

⁴⁸ See *id.*, at 21 (wireless providers “have conducted dozens of 5G trials across the country”).

⁴⁹ See *id.* (“[d]riven by intense competition, all national wireless providers have revealed 5G deployment plans with new announcements happening all the time”).

⁵⁰ See *id.* (by early 2019, 30 markets will have 5G).

late 2018 and mid-2019,”⁵¹ and analysts estimate that nearly half of the mobile subscriptions in North America will be 5G by 2023.⁵² As the trade press explains, the wireless industry is engaged in an “early 5G arms race.”⁵³

AT&T. AT&T is rapidly deploying advanced LTE technologies throughout the country. AT&T now offers 5G Evolution with theoretical peak speeds of 400 Mbps in more than 140 markets and plans to serve over 400 markets by the end of the year.⁵⁴ In addition, AT&T is starting to upgrade cell towers with LTE-Licensed Assisted Access (“LTE-LAA”), which achieves theoretical peak speeds of up to 1 Gbps.⁵⁵ LTE-LAA technology takes advantage of features like 256 QAM, 4x4 MIMO, and three-way carrier aggregation, which permit enormous boosts in speed and capacity.⁵⁶ AT&T has deployed LTE-LAA in fifteen markets and expects to reach at least 24 later this year.⁵⁷

AT&T has also announced that it “expect[s] to be the first U.S. company to introduce

⁵¹ Ericsson Mobility Report, at 6 (June 2018), <https://www.ericsson.com/assets/local/mobility-report/documents/2018/ericsson-mobility-report-june-2018.pdf>.

⁵² *See id.*, at 11.

⁵³ *See* Mike Dano, *Verizon, AT&T Show Surprise Increase In Network Spending in Q1*, FierceWireless (May 7, 2018), <https://www.fiercewireless.com/5g/verizon-at-t-show-surprise-increase-network-spending-q1>.

⁵⁴ AT&T Newsroom, *AT&T Bringing 5G to More U.S. Cities in 2018* (July 20, 2018), http://about.att.com/story/5g_to_launch_in_more_us_cities_in_2018.html.

⁵⁵ *See id.*

⁵⁶ AT&T Innovation Blog, *Setting the Record Straight on 5G Evolution* (Apr. 19, 2018), http://about.att.com/innovationblog/5g_evolution_record.

⁵⁷ AT&T Newsroom, *AT&T Builds on 5G Foundation in More Than 100 New Markets* (Apr. 20, 2018), http://about.att.com/story/att_builds_on_5g_foundation_in_more_than_100_new_markets.html; AT&T Newsroom, *AT&T Bringing 5G to More U.S. Cities in 2018* (July 20, 2018), http://about.att.com/story/5g_to_launch_in_more_us_cities_in_2018.html.

mobile 5G service in a dozen markets by late 2018.”⁵⁸ AT&T’s initial build-out will rely on 39 GHz millimeter wave spectrum that AT&T purchased from FiberTower in February, 2018.⁵⁹ Moreover, AT&T is expanding its deployment of software-defined networking and related elements like white box and Network AI, which will support the massive data use 5G will bring.⁶⁰ Having virtualized 55 percent of its network already, AT&T plans to reach 75 percent virtualization by 2020.⁶¹ AT&T’s capital spending in the first half of 2018 was more than \$11 billion, and AT&T expects its overall capital spending for 2018 to be \$22 billion.⁶²

Sprint. Sprint claimed in February 2018 that it is “Positioned To Lead in 5G”⁶³ and announced that it will launch mobile 5G services on its 2.5 GHz spectrum holdings on a nationwide basis in the first half of 2019.⁶⁴ Sprint’s 2.5 GHz spectrum is unusual because it is mid-band

⁵⁸ 2017 SEC Form 10-K for AT&T at 2. *See also* Monica Allevan, *AT&T Plans to Launch Mobile 5G In A Dozen Cities by Late 2018*, FierceWireless (Jan. 4, 2018), <https://www.fiercewireless.com/wireless/at-t-plans-to-launch-mobile-5g-dozen-cities-by-late-2018>. *See also* AT&T, *AT&T To Launch Mobile 5G In 2018* (Jan. 4, 2018), http://about.att.com/story/att_to_launch_mobile_5g_in_2018.html.

⁵⁹ *See* AT&T Newsroom, *AT&T Completes Acquisition of FiberTower Corporation* (Feb. 9, 2018), http://about.att.com/story/att_completes_acquisition_of_fibertower_corporation.html.

⁶⁰ *See* AT&T Innovation Blog, *Setting the Record Straight on 5G Evolution* (Apr. 19, 2018), http://about.att.com/innovationblog/5g_evolution_record.

⁶¹ *See* AT&T Newsroom, *AT&T Drives Path to Nationwide Mobile 5G with Multi-Gigabit Speeds* (Feb. 20, 2018), http://about.att.com/story/multigigabit_mobile_5g.html.

⁶² AT&T Second Quarter Earnings, Investor Briefing (July 24, 2018), <https://investors.att.com/financial-reports/quarterly-earnings/2018>; Mike Dano, *Verizon, AT&T Show Surprise Increase In Network Spending in Q1*, FierceWireless (May 7, 2018), <https://www.fiercewireless.com/5g/verizon-at-t-show-surprise-increase-network-spending-q1>.

⁶³ Sprint Q3 FY2017 Results Conference Call (February 2, 2018), http://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2017/q3/3QFY17-Slides-Final.pdf.

⁶⁴ *See* Sprint Press Release, *Sprint Unveils Six 5G-Ready Cities; Significant Milestone Toward Launching First 5G Mobile Network in the U.S.* (Feb. 27, 2018), <http://newsroom.sprint.com/sprint-unveils-5g-ready-massive-mimo-markets.htm>.

spectrum available for deployment now, and can support the wide channels best suited to 5G. Sprint holds approximately 160 MHz of 2.5 GHz in the top 100 U.S. markets.⁶⁵ Although many believe Sprint stumbled in its rollout of 4G LTE services several years ago, Sprint's new leadership has been more successful in recent quarters, and has argued that its advantages in 2.5 GHz spectrum will allow it to leap-frog back to the front of the pack in 5G.⁶⁶ Sprint's Executive Chairman Marcelo Claure has consistently claimed that "Sprint is the only carrier that doesn't have to compromise what 5G can deliver because we can deliver super wide channels of more than 100 MHz while still delivering mid-band coverage characteristics."⁶⁷

Those "super wide channels" allow Sprint to deploy Massive MIMO radios and offer both advanced LTE and 5G services over its 2.5 GHz spectrum.⁶⁸ Sprint is already deploying those

⁶⁵ *Id.* ("[w]ith 204 MHz of spectrum and more than 160 MHz of 2.5 GHz spectrum in top 100 markets, Sprint is uniquely positioned with enough capacity to deliver a nationwide 5G mobile network using licensed spectrum"); *see also* 3Q2017 SEC Form 10-Q for Sprint at 42 (arguing that Sprint's "substantial spectrum holdings are sufficient to allow us to continue to provide consistent network reliability, capacity, and speed, as well as to provide current and future customers a highly competitive wireless experience").

⁶⁶ Sprint Corp., Q3 2017 Earnings Call, at 16 (Feb. 2, 2018), http://s21.q4cdn.com/487940486/files/doc_financials/transcripts/S-US-20180202-2039822-C.pdf, at 16 ("What I can tell you is as a company, we could not be more excited that 5G is coming, right, and we see 5G as a very important milestone in the history of Sprint because we have the spectrum to basically lead on 5G and lead in a different way"); *id.* at 6 ("There are a lot of claims being made about 5G by our competitors. We believe Sprint is best positioned to be the first carrier with a nationwide mobile 5G platform.").

⁶⁷ Mike Dano, *Sprint promises to launch nationwide mobile 5G network in first half of 2019*, FierceWireless (Feb. 2, 2018), <https://www.fiercewireless.com/5g/sprint-promises-to-launch-nationwide-mobile-5g-network-first-half-2019-and-to-raise-unlimited>.

⁶⁸ Sprint Investor Relations, *Sprint Unveils Six 5G-Ready Cities; Significant Milestone Toward Launching First 5G Mobile Network in the U.S.* (Feb. 27, 2018), <http://investors.sprint.com/news-and-events/press-releases/press-release-details/2018/Sprint-Unveils-Six-5G-Ready-Cities-Significant-Milestone-Toward-Launching-First-5G-Mobile-Network-in-the-US/default.aspx> ("Because of Sprint's large spectrum holdings it is also one of the only operators in the world with enough capacity to operate LTE and 5G simultaneously over 100-200 MHz on the same Massive MIMO radios"); *see also* Sprint, Quarterly Investment Update, Fiscal 4Q17 (May 2, 2018), http://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2017/q4/Fiscal-4Q17-Sprint-

capabilities in many of its largest markets, including Chicago, Dallas, and Los Angeles, and it will add Atlanta, Houston, and Washington, D.C. later this year.⁶⁹ Where deployed, these new radios increase the network's capacity tenfold.⁷⁰

These efforts are reflected in Sprint's increasing capital expenditures, which in the fourth quarter of 2017 were up 7.9 percent from the preceding year,⁷¹ and which Sprint projects to continue in fiscal year 2018.⁷² Sprint has reported that "we continue to increase coverage and capacity by densifying and optimizing our existing network," including "increasing the number of small cells and antennas," "deploying new technologies, such as carrier aggregation," and "introduc[ing] tri-band devices."⁷³ These "densification and optimization efforts are expected to continue to enhance the customer experience by adding data capacity, increasing the wireless data speeds available to our customers, and improving network performance for both voice and data services."⁷⁴

T-Mobile. T-Mobile is also aggressively upgrading its LTE network and deploying 5G-

Quarterly-Investor-Update-FINAL.pdf ("Sprint is building a super-reliable, high-capacity mobile network that will deliver a great LTE experience and enable industry-leading 5G capabilities").

⁶⁹ Sprint Investor Relations, *Sprint Unveils Six 5G-Ready Cities; Significant Milestone Toward Launching First 5G Mobile Network in the U.S.* (Feb. 27, 2018), <http://investors.sprint.com/news-and-events/press-releases/press-release-details/2018/Sprint-Unveils-Six-5G-Ready-Cities-Significant-Milestone-Toward-Launching-First-5G-Mobile-Network-in-the-US/default.aspx>.

⁷⁰ Monica Allevan, *Sprint, Ericsson tout field tests for 2.6 GHz Massive MIMO*, FierceWireless (Sept. 12, 2017), <https://www.fiercewireless.com/wireless/sprint-ericsson-tout-field-tests-for-2-5-ghz-massive-mimo>.

⁷¹ JP Morgan, 4Q17 Wireless Scorecard 4Q17.

⁷² IEEE ComSoc, *Sprint to increase CAPEX to focus on mobile 5G deployment in 1H-2019* (Feb. 3, 2018), <http://techblog.comsoc.org/2018/02/03/sprint-to-increase-capex-to-focus-on-mobile-5g-in-2019/>.

⁷³ See Sprint 3Q2017 SEC Form 10-Q, at 40, <http://investors.sprint.com/financials/default.aspx>.

⁷⁴ *Id.*

ready infrastructure. In 2017, “T-Mobile made its largest network investment ever, tripling its low-band spectrum holdings by purchasing 45% of the spectrum sold in the US government’s 600 MHz auction – 31 MHz nationwide.”⁷⁵ “These holdings cover 100% of the U.S.”⁷⁶ And T-Mobile almost immediately began using that spectrum to upgrade its current LTE network and to deploy 5G-ready infrastructure.

On the LTE front, T-Mobile has already used its 600 MHz spectrum to deploy “Extended Range LTE” in over 900 cities across 32 states.⁷⁷ “T-Mobile’s Extended Range LTE signals travel twice as far from the cell tower and are four times better in buildings than mid-band LTE, providing increased coverage and capacity.”⁷⁸ T-Mobile is also adding 25,000 small cells to activate LTE-LAA technology, which “adds extra capacity and speed, while paving the way for 5G.”⁷⁹

T-Mobile’s deployment of 5G is also well underway. T-Mobile has assembled a portfolio of low-, mid-, and high-band spectrum for its 5G deployment. T-Mobile has repeatedly touted the advantages of this “multi-spectrum” strategy, which includes significant “unpopulated” spectrum that does not need to be re-farmed.⁸⁰ Relying on this spectrum, T-Mobile is currently building a

⁷⁵ T-Mobile Newsroom, *T-Mobile 600 MHz Extended Range LTE Now Live in 900+ Cities & Towns, Coming to Puerto Rico* (June 6, 2018), <https://www.t-mobile.com/news/extended-range-lte-puerto-ric>.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ T-Mobile Press Release, *T-Mobile Building Out 5G in 30 Cities This Year ... And That’s Just The Start* (Feb. 2, 2018), <https://www.t-mobile.com/news/mwc-2018-5>.

⁸⁰ *See, e.g., id.* (“T-Mobile is in a unique position with 5G, with its unpopulated spectrum holdings and multi-spectrum strategy. While other wireless companies must kick customers off their congested LTE networks to build out 5G, the Un-carrier is building 5G on wide-open airwaves. . . . A multi-spectrum strategy is critical to delivering a breakthrough consumer experience—an experience that includes national coverage and reliability from low band spectrum, reliable capacity and consistent mobile broadband speed with mid band spectrum and multi-gigabit hotspots in urban areas and on campuses with millimeter wave”).

5G network that will reach 30 cities by the end of 2018 and nationwide by 2020.⁸¹ Although T-Mobile's initial deployments will use millimeter wave spectrum,⁸² T-Mobile is already deploying "5G-ready" equipment on its 600 MHz infrastructure, with a promise that it will "light up" a nationwide 5G network with a "flip of the switch" by 2020 using that spectrum.⁸³ T-Mobile will eventually use its mid-band spectrum holdings for 5G as well, claiming that it already has "an impressive volume of mid-band spectrum to deploy 5G."⁸⁴ T-Mobile has consistently argued, since early 2017, that it is positioned "to deliver a 5G network that offers BOTH breadth and depth nationwide."⁸⁵

⁸¹ See Wireless Week, *T-Mobile Goes "All In" on 5G, Sets 2020 Target for Nationwide Mobile Network* (May 2, 2017), <https://www.wirelessweek.com/news/2017/05/t-mobile-goes-all-5g-sets-2020-target-nationwide-mobile-network>.

⁸² See Telco Transformation, *T-Mobile Walks a Fine Line on 5G Spectrum* (Feb. 9, 2018), http://www.telcotransformation.com/author.asp?section_id=696&doc_id=740479 (T-Mobile has what its CTO calls "a nice big, hefty chunk" of mmW spectrum).

⁸³ See, e.g., T-Mobile, Q4 and Full-Year 2017 Investor FactBook (February 2018), at 7, <http://investor.t-mobile.com/Cache/1001231994.PDF?O=PDF&T=&Y=&D=&FID=1001231994&iid=4091145> at 7 ("Our 600 MHz spectrum holdings will be used to deploy America's first nationwide 5G network expected by 2020"); T-Mobile, Video Vlog, Exhibit 99.3, <http://investor.t-mobile.com/Cache/1001228566.PDF?O=PDF&T=&Y=&D=&FID=1001228566&iid=4091145> at 2 ("When the time comes, we will literally turn on 5G with the flip of a switch! And as I've said many times before, we expect to be the first wireless provider with a nationwide 5G network."); Jon Brodtkin, *New T-Mobile upgrade may boost your coverage – if you have the right phone; T-Mobile's 600 MHz available in 32 states, filling LTE gaps outside big cities*, ARS Technica (June 7, 2018), <https://arstechnica.com/information-technology/2018/06/new-t-mobile-upgrade-may-boost-your-coverage-if-you-have-the-right-phone/> (T-Mobile is using "5G-ready equipment" for its 600 MHz deployment of Extended range LTE, which means that it can enable 5G "with the flip of a switch without having to touch towers twice."); Neville Ray, *Setting the 5G Record Straight: Announcing Plans for Nationwide 5G from T-Mobile*, T-Mobile News Room (May 2, 2017), <https://www.t-mobile.com/news/nationwide-5g-blog> ("T-Mobile is the first company to commit to building a nationwide 5G network").

⁸⁴ T-Mobile Newsroom, *Setting the 5G Record Straight: Announcing Plans for Nationwide 5G from T-Mobile* (May 1, 2017), <https://www.t-mobile.com/news/nationwide-5g-blog>.

⁸⁵ *Id.*

Verizon. Verizon is also upgrading its LTE network through densification and the integration of LTE-LAA, carrier aggregation, 4x4 MIMO, and 256 QAM technologies.⁸⁶ It has announced that it expects to invest in acquiring wireless spectrum, putting spectrum into service, building capacity, its fiber-optic network, and maintaining advanced information technology systems and data system capabilities.⁸⁷ Verizon has announced that its commercial launch of 5G wireless residential broadband services will take place in the second half of 2018, beginning with three to five cities.⁸⁸ Verizon plans to use its millimeter wave spectrum to support this service.⁸⁹ One Verizon executive has claimed that “Verizon now has all of the pieces in place to quickly

⁸⁶ Sean Kinney, *Verizon tallies more than 1,100 markets with LTE-Advanced*, RCR Wireless (July 16, 2018), <https://www.rcrwireless.com/20180716/network-infrastructure/lte/verizon-lte-advanced-tag17?elqTrackId=5FCE649CB371738188DCEB5ECBDACD81&elq=65a7ace43f454e92a3ed2884d0740305&elqaid=7233&elqat=1&elqCampaignId=6185> (interview with Verizon Chief Network Engineers Officer and Head of Wireless Networks Nicola Palmer); Sean Kinney, *Verizon’s Vestberg on balancing network capex with buying spectrum*, RCR Wireless (May 21, 2018), <https://www.rcrwireless.com/20180521/carriers/verizon-network-capex-spectrum-tag17> (comments of Verizon EVP, CTO and President of Global Networks Hans Vestberg).

⁸⁷ See Verizon 1Q2018 SEC Form 10-Q, at 32, <https://www.verizon.com/about/investors/sec-filings>. Verizon is creating what it calls its intelligent edge network through converging its fiber investment for its wireless and wireline businesses, network virtualization, and “network slicing” (using a common network core to support different capabilities for different access points and users); Matha DeGrasse, *Verizon holds capex steady as wireless and wireline converge*, RCR Wireless (Jan 22, 2018), <https://www.rcrwireless.com/20180122/carriers/verizon-holds-capex-steady-as-wireless-and-wireline-converge-tag4>; see also Network Builder Reports, *Verizon CTO Hans Vestberg describes network plans*, <https://www.nbreports.com/hans-vestberg-verizon>.

⁸⁸ Verizon Sellside Analyst Meeting (Nov. 29, 2017) Presentation, <http://www.verizon.com/about/investors/analyst-meeting-including-5g-launch-news-release>.

⁸⁹ *Id.* at 8; Sean Kinney, *Verizon tallies more than 1,100 markets with LTE-Advanced*, RCR Wireless (July 16, 2018), <https://www.rcrwireless.com/20180716/network-infrastructure/lte/verizon-lte-advanced-tag17?elqTrackId=5FCE649CB371738188DCEB5ECBDACD81&elq=65a7ace43f454e92a3ed2884d0740305&elqaid=7233&elqat=1&elqCampaignId=6185> (interview with Verizon Chief Network Engineers Officer and Head of Wireless Networks Nicola Palmer).

accelerate the deployment of 5G.”⁹⁰

Advertising. Each of the four national providers spent more than a *billion* dollars on advertising in 2017 (AT&T \$3.7 billion; Sprint \$1.3 billion; T-Mobile \$1.8 billion; and Verizon \$2.6 billion), with campaigns that often directly and explicitly target customers of the other national providers.⁹¹ Further, as discussed above, they are seemingly constantly developing innovative offers attempting to one-up their rivals, most recently, for example, by including video and music streaming services to their wireless offerings. And perhaps most telling, as described below, they literally pay customers to switch from the other three national providers, either with direct payments or by offering switchers lower priced plans.

Consumer Conduct. Consumer behavior also continues to demonstrate that the wireless sector is competitive. Foremost, customers confirm that providers are offering ever-increasing levels of service. The American Customer Satisfaction Index (“ACSI”) for 2017 reported that “[c]ustomer satisfaction with wireless telephone service climb[ed] 2.8% to 73, as carriers engage in increasingly competitive price wars.”⁹² The ASCI report emphasized that “[c]ompared with other telecom categories where customers have little choice, the wireless industry is a good

⁹⁰ See PR Newswire, Verizon to acquire Straight Path spectrum to accelerate 5G deployment (May 11, 2017), <https://www.prnewswire.com/news-releases/verizon-to-acquire-straight-path-spectrum-to-accelerate-5g-deployment-300456169.html>; see also Thomson Reuters Streetevents, Q1 2017 Verizon Communications Inc. Earnings Call, <https://www.verizon.com/about/file/21877/download?token=HD2TwYhI> (Verizon’s CFO said that “we’re very confident” in “our spectrum position,” and “[w]e have significant opportunities to continue to grow within the spectrum holdings that we currently have”).

⁹¹ See T-Mobile 2017 SEC Form 10-K, at 68 (\$1.8 billion); Verizon 2017 SEC Form 10-K, at n.14 (\$2.6 billion); Sprint 2017 SEC Form 10-K, at F-17 (\$1.3 billion); AT&T 2017 Annual Report, at n.19 (\$3.7 billion).

⁹² See American Customer Satisfaction Index, *ACSI Telecommunications Report 2017* at 8 (May 23, 2017), <http://www.theacsi.org/news-and-resources/customer-satisfaction-reports/reports-2017/acsi-telecommunications-report-2017/acsi-telecommunications-report-2017-download>.

example of how competition impacts customer satisfaction. When companies fight for customers, prices are competitive, service improves, and customer satisfaction is higher.”⁹³

Moreover, barriers to switching and switching costs are lower than ever. As the Commission has observed, the more easily a consumer can switch wireless providers, “the more competitive pressure is put on mobile wireless service providers to improve their service in order to retain their customers.”⁹⁴ Today, consumers continue to have more access than ever to the information they need to make informed comparisons of price, quality and other attributes of wireless services offered by rival providers. There are myriad websites and other sources (including brick and mortar stores) that provide extensive analyses and comparisons of provider services,⁹⁵ and, as noted, providers themselves are spending more than a billion dollars a year on advertising to inform consumers about the relative benefits of their networks. Providers also allow consumers to test their networks with no long-term obligations.⁹⁶ Equally important, the industry has moved away from long-term contracts, and to the extent there are switching costs, providers

⁹³ *Id.* at 8.

⁹⁴ Fifteenth Report, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, WT Docket No. 10-133, ¶ 11 (rel. June 27, 2011).

⁹⁵ See, e.g., Consumer Reports, *Cell Phone & Service Buying Guide* (Sept. 2016), <http://www.consumerreports.org/cro/cell-phones-services/buying-guide>; Wirefly, *Compare Cell Phone Plan*, <https://www.wirefly.com/content/phone-plans>; WhistleOut, *Compare The Best Cell Phone Plans*, <https://www.whistleout.com/CellPhones>.

⁹⁶ See, e.g., AT&T, Service Agreement, https://www.att.com/equipment/legal/service-agreement.jsp?q_termsKey=postpaidServiceAgreement&q_termsName=Service+Agreement; Anu Passary, *Sprint Wants You To Switch, Offers 30-Day Satisfaction Guarantee: Here Are The Details*, Tech Times (March 27, 2016), <http://www.techtimes.com/articles/144507/20160327/sprint-wants-you-to-switch-offers-30-day-satisfaction-guarantee-here-are-the-details.htm>; T-Mobile, *Lifetime Coverage Guarantee*, <http://explore.t-mobile.com/coverage-guarantee> (“Within 30 days, if you’re not satisfied, call or visit one of our participating T-Mobile stores to return your device for a full refund of service and device related costs.”).

offer to *pay* those costs to entice consumers to switch.⁹⁷ A recent report found that, as a result of the intense competition and ease of switching providers, “[n]early one-fifth of U.S. postpaid subscribers are considering switching carriers.”⁹⁸ Verizon learned this the hard way when it failed to immediately respond to the shift to unlimited plans and, as the Washington Post reported, “lo[st] more cellphone customers than ever,” as Verizon saw “hundreds of thousands of customers defect to competitors such as T-Mobile and Sprint.”⁹⁹

⁹⁷ See, e.g., T-Mobile Website, *Joining T-Mobile? Here’s everything you to know*, https://www.t-mobile.com/offer/switch-carriers-no-early-termination-fee.html?irgwc=1&clickid=Wd2TNA0mVVQ1S9YS0CVIoQ2VUkhyIIRK3XseWA0&iradid=187834&ircid=3290&irpid=123412&cmpid=WTR_AF_Digital%20Trends.&sharedid (T-Mobile will provide up to \$650); T-Mobile, “*Grandfathered*” AT&T Customers Face Triple Price Hike T-Mobile Gives Them Up to \$900 to Switch (June 14, 2018), <https://www.t-mobile.com/news/t-mobile-saves-grandfathered-att-customers>; Sprint, *Switch to Sprint and get a Clean Slate*, <https://promo.sprint.com/Registration/DisplayLanding?LandingPartial=CBOLanding> (Sprint will provide up to \$550).

⁹⁸ Colin Gibbs, *Nearly one-fifth of U.S. postpaid subscribers considering switching* Jefferies says, FierceWireless (July 13, 2017), <https://www.fiercewireless.com/wireless/nearly-one-fifth-u-s-postpaid-subs-considering-switching-jefferies>.

⁹⁹ Brian Fung, *Why Verizon is losing more cellphone customers than ever*, Washington Post (April 20, 2017), https://www.washingtonpost.com/news/the-switch/wp/2017/04/20/why-verizon-is-losing-more-cellphone-customers-than-ever/?noredirect=on&utm_term=.5d94dec2bbc7.

CONCLUSION

For the foregoing reasons, the Commission should find that the wireless marketplace is intensely competitive.

Respectfully submitted,

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July 26, 2018